

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.-17. (Cancelled)

18. (New) An automotive lane deviation prevention (LDP) apparatus, comprising:

(a) a lane marking detection section configured to detect a lane marking line of a driving lane of a host vehicle, based on a picture image in front of the host vehicle;

(b) a lateral displacement estimation section configured to estimate, based on the lane marking line, a future lateral displacement of the host vehicle relative to the host vehicle's driving lane;

(c) a road surface irregularities detection section configured to determine whether the host vehicle is traveling on predetermined road surface irregularities formed on or close to the lane marking line; and

(d) a vehicle yawing motion control section configured to execute vehicle yawing motion control by which the host vehicle returns toward a central position of the host vehicle's driving lane;

wherein the vehicle yawing motion control section initiates the vehicle yawing motion control when the host vehicle is traveling on predetermined road surface irregularities while the lane marking detection section cannot recognize or detect the lane marking line and an absolute value of the future lateral displacement immediately before the lane marking detection section cannot recognize or detect the lane marking line is greater than or equal to a predetermined lateral displacement criterion.

19. (New) The automotive lane deviation prevention apparatus as claimed in claim 18, further comprising:

wheel speed sensors configured to detect respective wheel speeds of road wheels of the host vehicle,

wherein the road surface irregularities detection section is configured to determine that the host vehicle is traveling on predetermined road surface irregularities when at least one

of the wheel speeds detected by the wheel speed sensors is fluctuating at a substantially constant oscillation frequency in relation to a host vehicle speed.

20. (New) The automotive lane deviation prevention apparatus as claimed in claim 19, wherein:

the road-surface irregularities detection section is configured to determine that the host vehicle is traveling on predetermined road surface irregularities only when either one of left and right wheel speeds is fluctuating.

21. (New) The automotive lane deviation prevention apparatus as claimed in claim 18, further comprising:

a vehicle-suspension up-and-down motion sensor configured to detect an up-and-down motion of a suspension of the host vehicle,

wherein the road surface irregularities detection section is configured to determine, based on the suspension's up-and-down motion detected, whether the host vehicle is traveling on predetermined road surface irregularities.

22. (New) The automotive lane deviation prevention apparatus as claimed in claim 18, further comprising a processor programmed to perform the following,

(1) determining whether the host vehicle is traveling within an area except road-ways; and

(2) inhibiting a check for the host vehicle traveling on the predetermined road surface irregularities, when the host vehicle is traveling within the area except road-ways.

23. (New) An automotive lane deviation prevention (LDP) apparatus, comprising:

(a) lane marking detection means for detecting a lane marking line of a driving lane of a host vehicle, based on a picture image in front of the host vehicle;

(b) lateral displacement estimation means for estimating, based on the lane marking line, a future lateral displacement of the host vehicle relative to the host vehicle's driving lane;

(c) road surface irregularities detection means for detecting whether the host vehicle is traveling on predetermined road surface irregularities formed on or close to the lane marking line; and

(d) vehicle yawing motion control means for executing vehicle yawing motion control by which the host vehicle returns toward a central position of the host vehicle's driving lane;

wherein the vehicle yawing motion control means initiates the vehicle yawing motion control when the host vehicle is traveling on predetermined road surface irregularities while the lane marking detection means cannot recognize or detect the lane marking line and an absolute value of the future lateral displacement immediately before the lane marking detection means cannot recognize or detect the lane marking line is greater than or equal to a predetermined lateral displacement criterion.

24. (New) The automotive lane deviation prevention apparatus as claimed in claim 23, further comprising:

sensor means for detecting respective wheel speeds of road wheels of the host vehicle, wherein the road surface irregularities detection means is configured to determine that the host vehicle is traveling on predetermined road surface irregularities when at least one of the wheel speeds detected by the sensor means is fluctuating at a substantially constant oscillation frequency in relation to a host vehicle speed.

25. (New) The automotive lane deviation prevention apparatus as claimed in claim 24, wherein:

the road surface irregularities detection means determines that the host vehicle is traveling on predetermined road surface irregularities only when either one of left and right wheel speeds is fluctuating.

26. (New) The automotive lane deviation prevention apparatus as claimed in claim 23, further comprising:

vehicle-suspension up-and-down motion sensor means for detecting an up-and-down motion of a suspension of the host vehicle,

wherein the road surface irregularities detection means determines, based on the suspension's up-and-down motion detected, whether the host vehicle is traveling on predetermined road surface irregularities.

27. (New) The automotive lane deviation prevention apparatus as claimed in claim 23, further comprising a processor programmed to perform the following,

(1) determining whether the host vehicle is traveling within an area except road-ways; and

(2) inhibiting a check for the host vehicle traveling on the predetermined road surface irregularities, when the host vehicle is traveling within the area except road-ways.

28. (New) A method of preventing lane deviation of a host vehicle employing braking, the method comprising:

(a) detecting a lane marking line of a driving lane of a host vehicle, based on a picture image in front of the host vehicle;

(b) estimating, based on the lane marking line, a future lateral displacement of the host vehicle relative to the host vehicle's driving lane;

(c) detecting whether the host vehicle is traveling on predetermined road surface irregularities formed on or close to the lane marking line; and

(d) executing vehicle yawing motion control by which the host vehicle returns toward a central position of the host vehicle's driving lane;

wherein the vehicle yawing motion control initiates when the host vehicle is traveling on predetermined road surface irregularities while the lane marking detecting cannot recognize or detect the lane marking line and an absolute value of the future lateral displacement immediately before the lane marking detecting cannot recognize or detect the lane marking line is greater than or equal to a predetermined lateral displacement criterion.

29. (New) The method as claimed in claim 28, further comprising:

determining wheel speeds of each road wheel of the host vehicle with wheel speed sensors; and

determining that the host vehicle is traveling on predetermined road surface irregularities when at least one of the wheel speeds detected by the wheel speed sensors is fluctuating at a substantially constant oscillation frequency in relation to a host vehicle speed.

30. (New) The method as claimed in claim 29, further comprising:

determining that the host vehicle is traveling on predetermined road surface irregularities only when either one of left and right wheel speeds is fluctuating.

31. (New) The method as claimed in claim 28, further comprising:

detecting an up-and-down motion of a suspension of the host vehicle; and
determining, based on the suspension's up-and-down motion detected, whether the host vehicle is traveling on predetermined road surface irregularities.

32. (New) The method as claimed in claim 28, further comprising:

determining whether the host vehicle is traveling within an area except road-ways; and
inhibiting a check for the host vehicle traveling on the predetermined road surface irregularities, when the host vehicle is traveling within the area except road-ways.